

CLAIMS

I CLAIM:

1. A method of measuring, for a signal S, the Unit Interval of a logical ONE, the method comprising
2 the steps of:

- (a) initializing a register R of k-many cells R:[1-k] to all ONEs; and then subsequently
- (b) delaying each transition in the signal S by selected amounts of k-many successive consecutive delays to produce a respective collection of Delayed Signals DS:[1-k], DS:(i+1) being delayed from DS:*i*, *i*= 1, 2, ..., k-1, the cumulative amount of delay from a transition in S to the corresponding transition in DS:k being at least as long as the longest unit interval to be measured;
- (c) clocking logical ZEROs among the DS:[1-k] into the corresponding and respective cells R:[1-k] upon a ONE-to-ZERO transition in the signal S to clear those cells while not using any ONEs to set their respective cells;
- (d) repeating steps (b) and (c) for a selected duration; and then
- (e) capturing the values of the k-many cells R:[1-k] and taking remaining ONEs therein as an indication, in units corresponding to the consecutive delays, of the Unit Interval of a logical ONE for the signal S.

2. A method as in claim 1 further comprising the step of selecting in step (b) each of the k-many delays to be equal.

2. A method as in claim 1 further comprising the step of selecting in step (b) at least the delay for producing DS:1 to be significantly greater than the delays for producing the other DS:*i*.

4. A method of measuring, for a signal S, the Unit Interval of a logical ZERO, the method comprising
2 the steps of:

- (a) initializing a register R of k-many cells R:[1-k] to all ZEROS; and then subsequently
- (b) delaying each transition in the signal S by selected amounts of k-many successive consecutive delays to produce a respective collection of Delayed Signals DS:[1-k], DS:(i+1) being delayed from DS:i, i= 1, 2, ..., k-1, the cumulative amount of delay from a transition in S to the corresponding transition in DS:k being at least as long as the longest unit interval to be measured;
- (c) clocking logical ONEs among the DS:[1-k] into the corresponding and respective cells R:[1-k] upon a ZERO-to-ONE transition in the signal S to set those cells while not using any ZEROS to clear their respective cells;
- (d) repeating steps (b) and (c) for a selected duration; and then
- (e) capturing the values of the k-many cells R:[1-k] and taking remaining ZEROS therein as an indication, in units corresponding to the consecutive delays, of the Unit Interval of a logical ZERO for the signal S.

5. A method as in claim 4 further comprising the step of selecting in step (b) each of the k-many
2 delays to be equal.

6. A method as in claim 4 further comprising the step of selecting in step (b) at least the delay for
2 producing DS:1 to be significantly greater than the delays for producing the other DS:i.

7. A method of measuring the Unit Interval for a signal S, the method comprising the steps of:

- (a1) initializing a register RONE of k-many cells RONE:[1-k] to all ONEs; and also
- (a2) initializing a register RZERO of k-many cells RZERO:[1-k] to all ZEROS; and then subsequently

- 6 (b) delaying each transition in the signal S by selected amounts of k-many successive
consecutive delays to produce a respective collection of Delayed Signals DS:[1-k], DS:(i+1)
being delayed from DS:*i*, *i*= 1, 2, ..., k-1, the cumulative amount of delay from a transition in S
to the corresponding transition in DS:k being at least as long as the longest unit interval to be
measured;
- 10 (c1) clocking logical ZEROs among the DS:[1-k] into the corresponding and respective cells
RONE:[1-k] upon a ONE-to-ZERO transition in the signal S to clear those cells while not using
any ONEs to set their respective cells;
- 12 (c2) clocking logical ONEs among the DS:[1-k] into the corresponding and respective cells
RZERO:[1-k] upon a ZERO-to-ONE transition in the signal S to set those cells while not using
any ZEROs to clear their respective cells;
- 14 (d) repeating steps (b), (c1) and (c2) for a selected duration; and then
- 16 (e1) capturing the values of the k-many cells RONE:[1-k] and taking remaining ONEs therein
as an indication, in units corresponding to the consecutive delays, of the Unit Interval of a logical
ONE for the signal S; and also
- 18 (e2) capturing the values of the k-many cells RZERO:[1-k] and taking remaining ZEROs therein
as an indication, in units corresponding to the consecutive delays, of the Unit Interval of a logical
ZERO for the signal S .

2 8. A method as in claim 7 further comprising the step of selecting in step (b) each of the k-many
delays to be equal.

2 9. A method as in claim 7 further comprising the step of selecting in step (b) at least the delay for
producing DS:1 to be significantly greater than the delays for producing the other DS:*i*.

10. A method as in claim 7 further comprising the step of combining into a single value the values

2 captured and taken in steps (e1) and (e2).

11. A method as in claim 10 wherein the step of combining is averaging.